

Notice of Allowability

Application No.

10/531,098

Examiner

Cindy D. Khuu

Applicant(s)

AI ET AL.

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 11/1/06.
2. ☒ The allowed claim(s) is/are 8,9,13 and 20-24.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Pertinent Art Cited

The following US Patent Applications reveal the current state of the art:

Theile et al. (US 2001/0046042) teach a speed sensing system (Fig. 1) for measuring the speed of a target object (1), comprising:

a first differential speed sensor unit (2) operatively disposed adjacent a surface of said target object (1), said first differential speed sensor unit configured to generate a first differential signal (4) responsive to the passage of at least one random feature of said target object (Fig. 1; Paragraphs 31-32);

a second differential speed sensor unit (2) operatively disposed adjacent a surface of said target object (1) and displaced at a predetermined distance (L) from said first differential speed sensor unit (2) substantially in a direction of motion of the target object (1), said second differential speed sensor unit configured to generate a second differential signal (4) responsive to the passage of said at least one random feature of said target object (Fig. 1; Paragraphs 31-32); and

a signal processor (8) configured to receive said first and second differential signals, said signal processor further configured to apply a cross correlation analysis to determine a phase shift between said first and second differential signals, said phase shift inversely proportional to a speed of said target object (Paragraphs 88 and 96).

However, Theile does not teach at least the speed sensing system wherein said signal processor is configured utilize a Fast Fourier Transform-based algorithm to determine a cross correlation function between said generated differential signals, said cross correlation function defined by: $y(\sigma) = \int x_1(t + \sigma) x_2(t) dt$ where x_1 is said first generated differential signal; x_2 is said second generated differential signal; t is a signal time; and σ is a time delay between said generated differential signals.

Allowable Subject Matter

Claims 8-9, 13 and 20-24 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claim 8 is the inclusion of the limitation "wherein said signal processor is configured utilize a Fast Fourier Transform-based algorithm to determine a cross correlation function between said generated differential signals, said cross correlation function defined by: $y(\sigma) = \int x_1(t + \sigma) x_2(t) dt$ where x_1 is said first generated differential signal; x_2 is said second generated differential signal; t is a signal time; and σ is a time delay between said generated differential signals". The prior art of record, taken alone or in combination, fails to disclose or render obvious.

The primary reason for the allowance of claim 13 is the inclusion of the limitation "each of said first and second differential speed sensing units has an identical sampling rate; and wherein said identical sampling rate is substantially greater than a signal variation rate for said first and second differential speed sensing units". The prior art of record, taken alone or in combination, fails to disclose or render obvious.

The primary reason for the allowance of claim 20 is the inclusion of the limitation "wherein said first differential speed sensor unit includes first and second speed sensors spaced at least perpendicular to a direction of motion of the target object, each of said first and second speed sensors configured to generate a signal responsive to the passage of at least one feature of said target; wherein said second differential speed sensor unit includes third and fourth speed sensors spaced at least perpendicular to a direction of motion of the target object, each of said third and fourth speed sensor units configured to generate a signal responsive to the passage of at least one feature of said target object; wherein said first and third speed sensors are disposed along a common line parallel to the direction of motion of the target object; wherein said second and fourth speed sensors are disposed on a second common line parallel to the motion of the target object; wherein said first differential signal is representative of a difference between said signals generated by said first and second speed sensors; and wherein said second differential signal is representative of a difference between said signals generated by said third and fourth speed sensors". The prior art of record, taken alone or in combination, fails to disclose or render obvious.

Claims 9 and 21-24 are allowed due to their dependency on claims 8 and 20.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cindy D. Khuu whose telephone number is (571) 272-8585. The examiner can normally be reached on M-F, 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

cdl 11/7/06


John Barlow
Supervisory Patent Examiner
Technology Center 2800